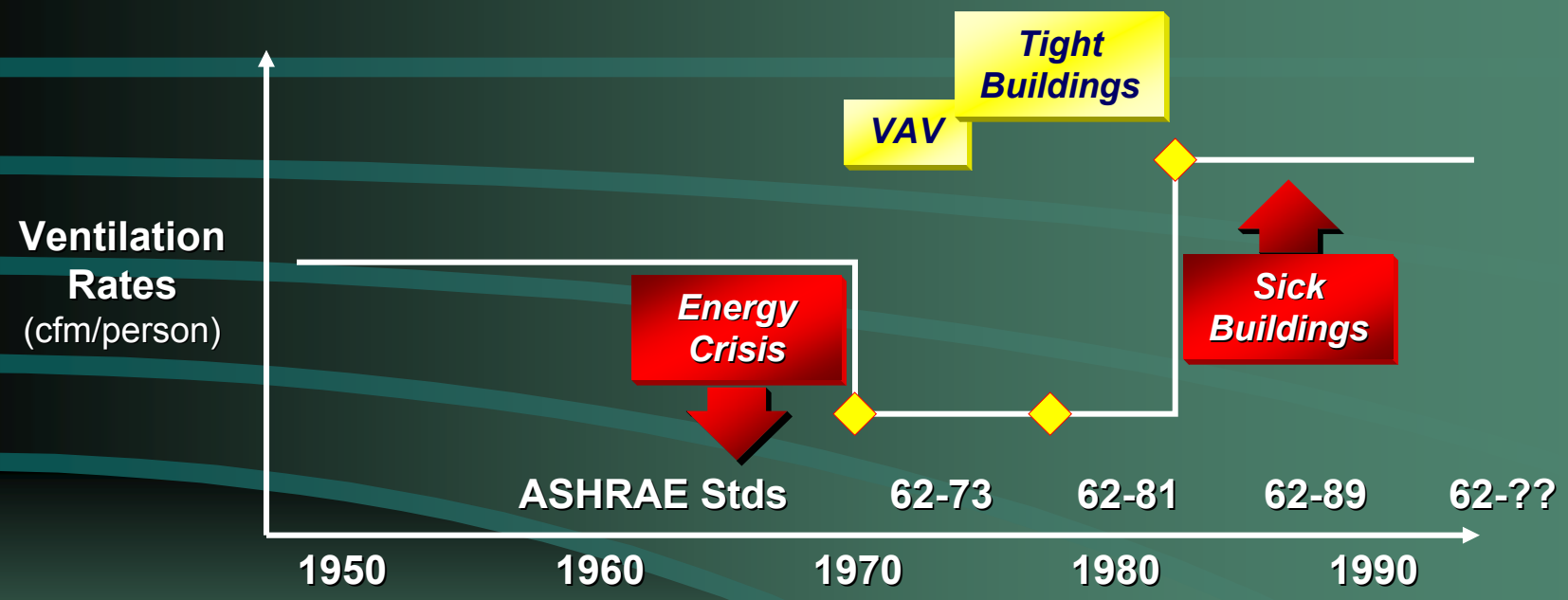
Overview of building impacts

Better humidity control:

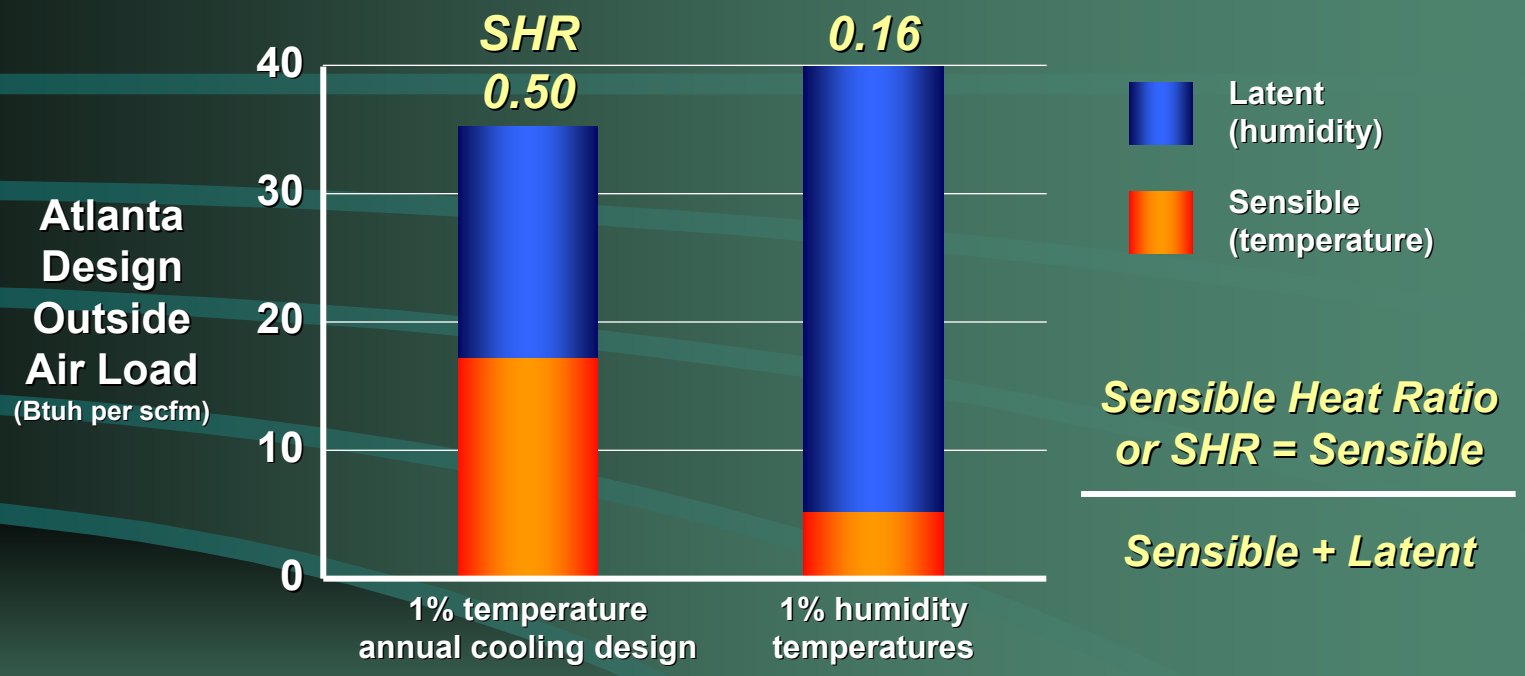
- Provides higher ventilation rates and better indoor air quality for more productive learning environments in schools
- Reduces cost of refrigeration in supermarkets and ice arenas
- Improves comfort in theaters and restaurants
- Decreases costly moisture damage to building structures and furnishings in hotels
- Limits exposure to allergens, pathogens, and chemicals

Ventilation Rate Chronology



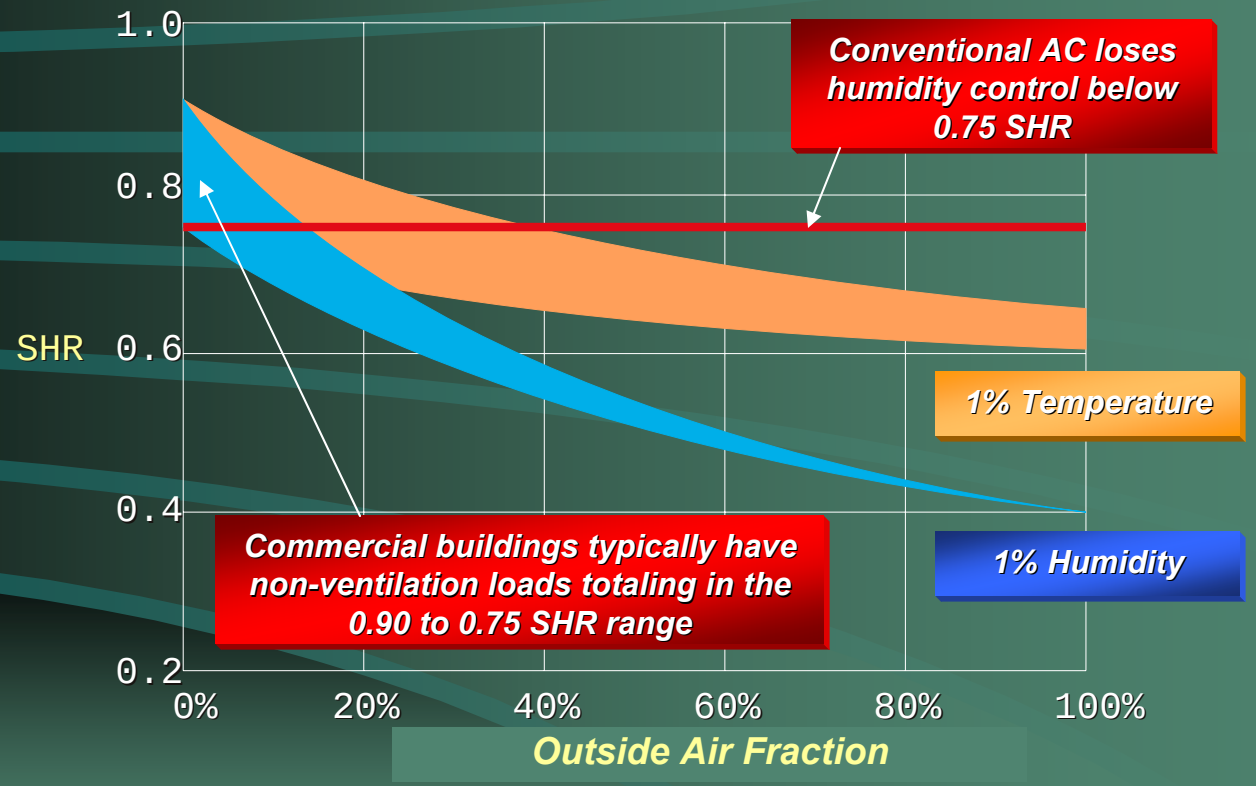
IAQ concerns lead to increased ventilation

Ventilation loads



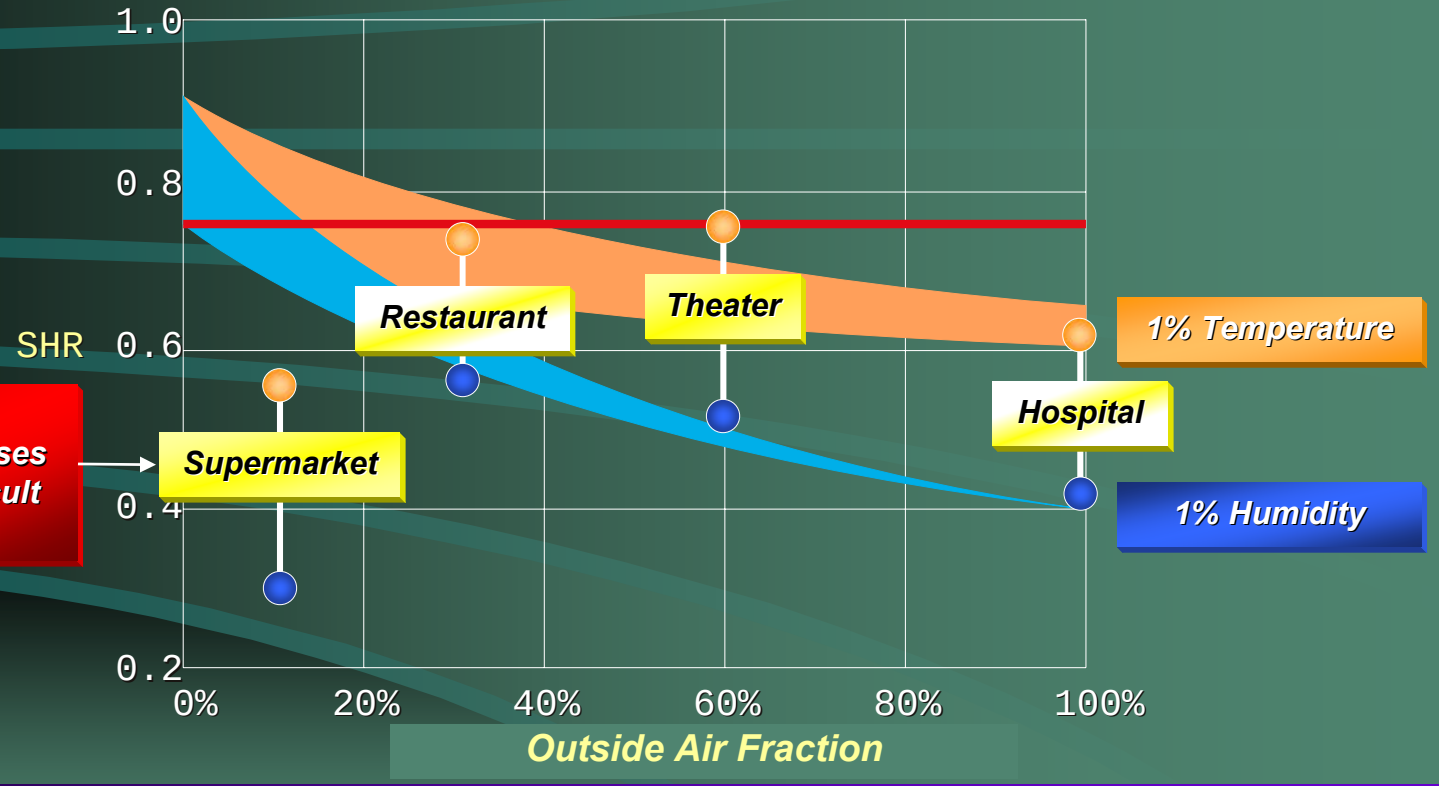
Ventilation load is mostly moisture especially at new design humidity conditions

Design loads versus OA%



Conventional air conditioning overmatched by increased ventilation

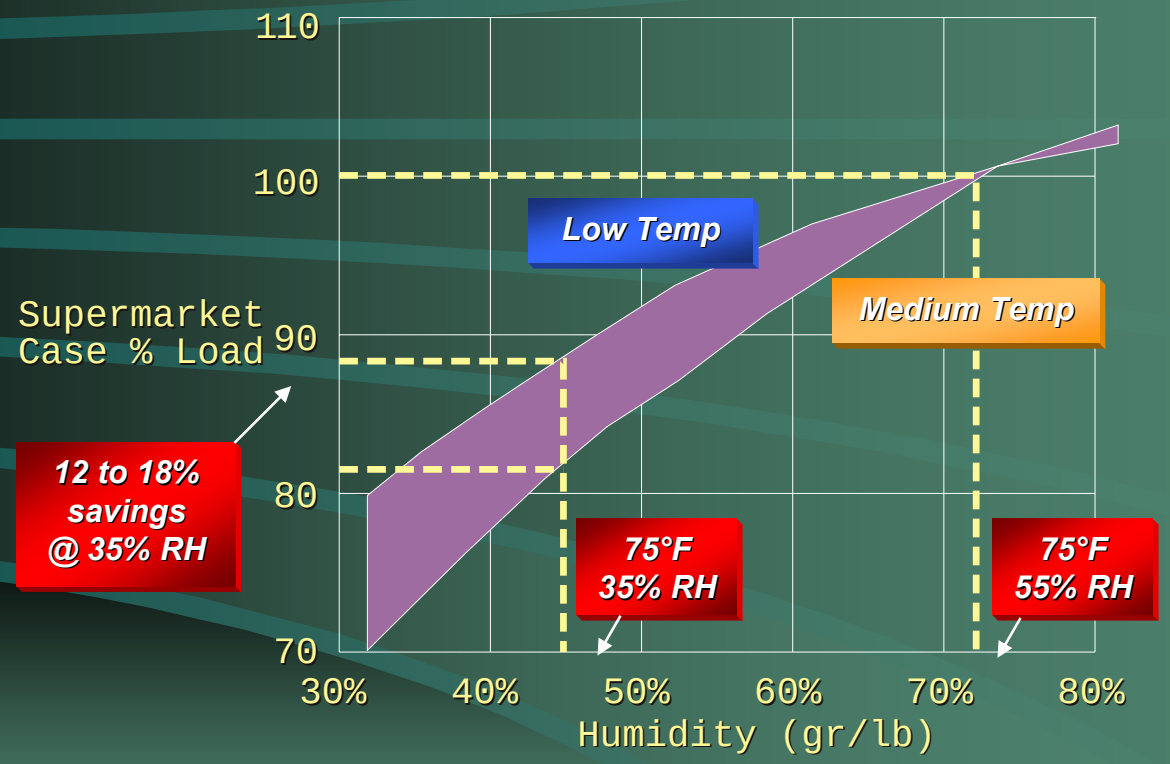
Design loads versus OA% for selected buildings



Buildings where refrigeration processes are even more difficult to control

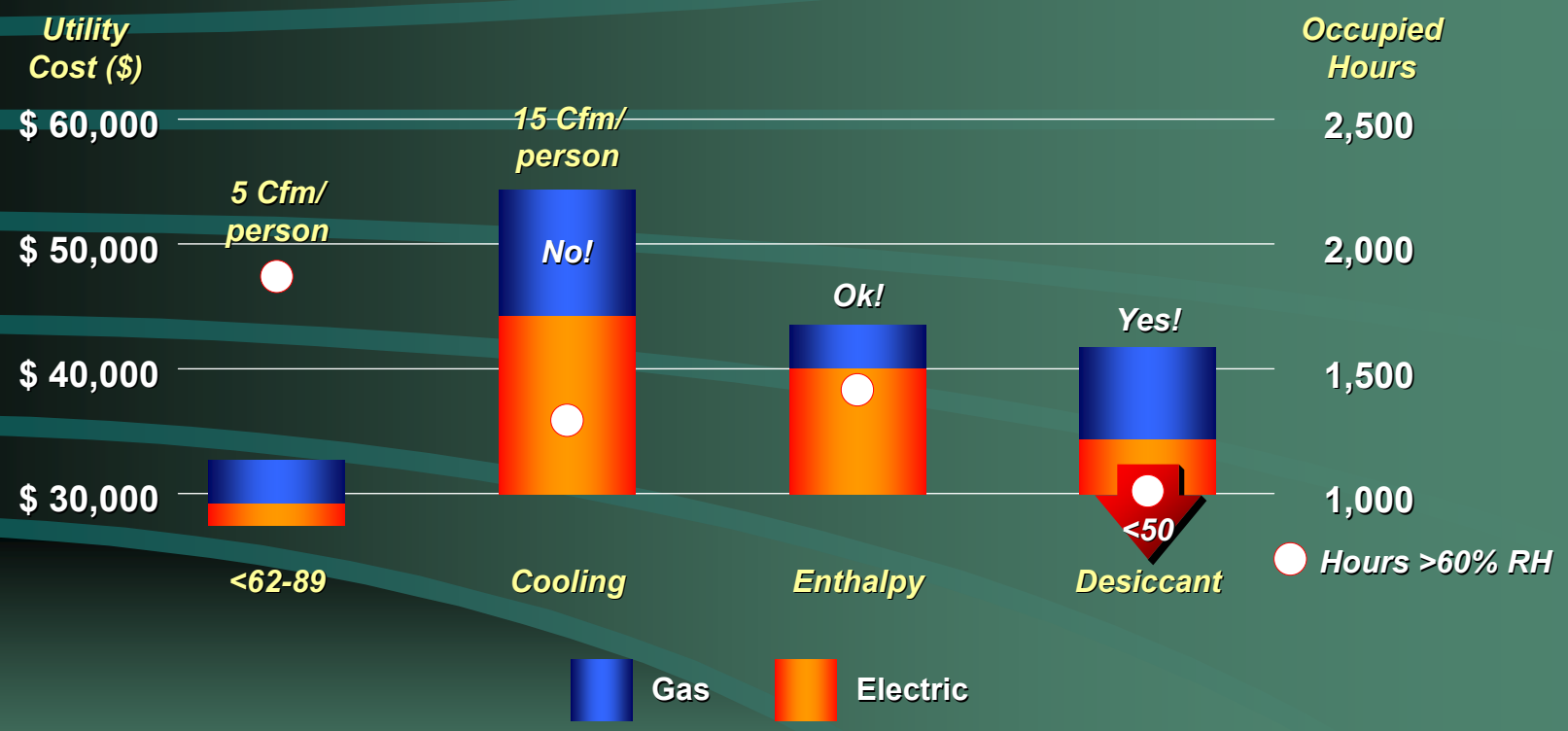
Many commercial buildings will need new humidity control equipment

Refrigeration loads versus humidity



Buildings with refrigeration processes benefit from drier air

Utility costs and discomfort for theater



 # hours theater over 60% RH reduced 96% with desiccant dehumidification

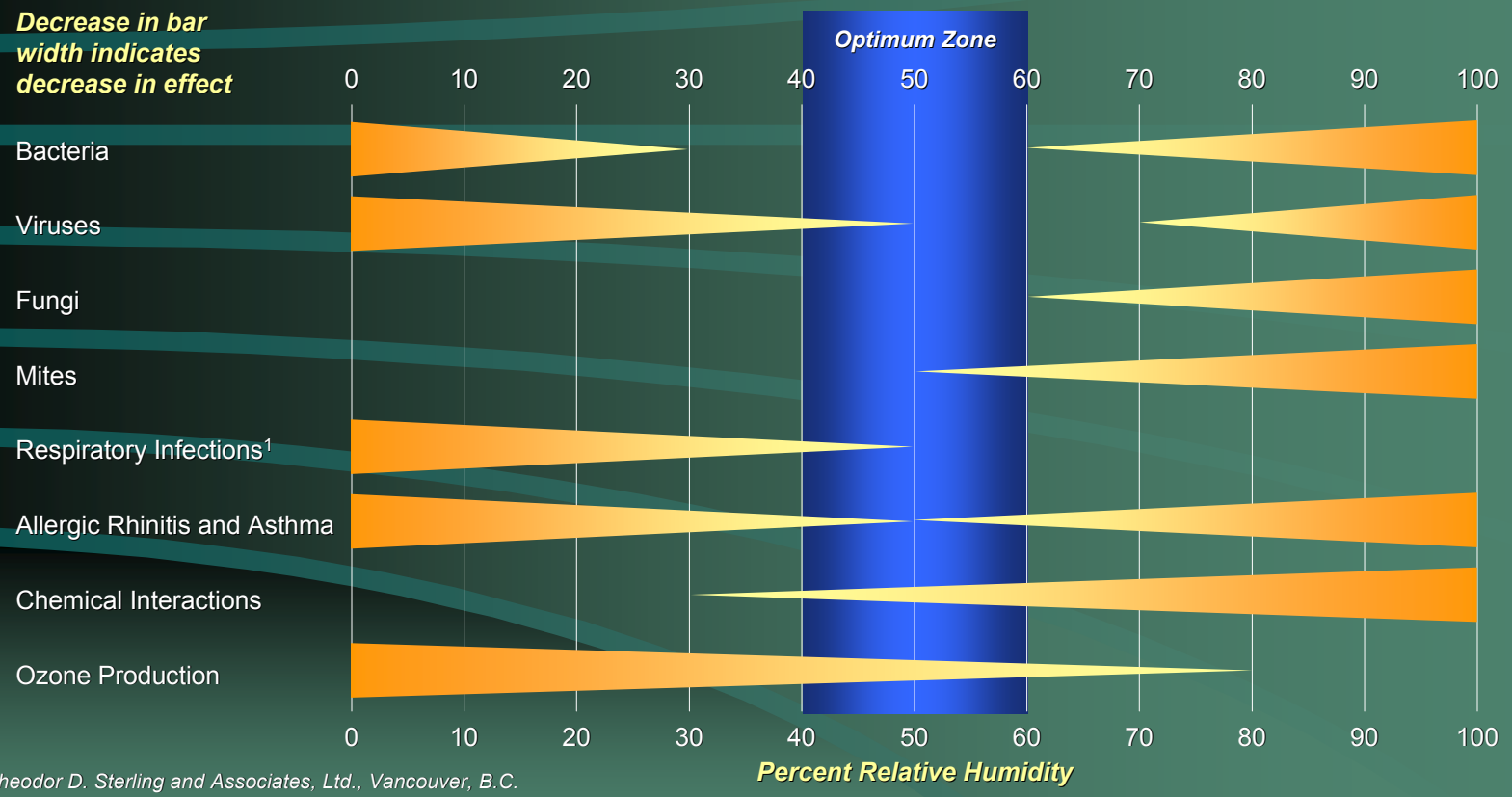
The mildew square

The following conditions are necessary for mold growth to occur on surfaces:

- Temperature (between 40°F and 120°F)
- Food (most surfaces contain nutrients)
- Mold spores (always present in air)
- Moisture

- Mold and mildew are fungi that can grow on the surfaces of most materials
- They can cause discoloration and odor problems, deteriorate building materials, and lead to allergic reactions in susceptible individuals, and other health problems
- In hotels alone, the AHMA estimates $70 million annually in losses due to moisture damage

Optimal humidity levels



Source: Theodor D. Sterling and Associates, Ltd., Vancouver, B.C.

Proper control of humidity reduces human exposures to allergens, pathogens, and chemicals